

**Preliminary**

ORDER NO ARD-7010094



# **NATIONAL**

## **Service Manual**

### **8 TRACK STEREO CARTRIDGE TAPE DECK**

### **MODEL RS-803US**



#### **SPECIFICATIONS**

Power Source: AC: 90~110, 110~125, 200~220,  
220~250 volts 50/60 Hz

Power Consumption: Approx. 30 watts

Motor: DC electronic governor motor

Transistors: 2SB 348(2) 2SB 346(4) 2SA 101(2)  
2SB 324(2) 2SB 175(1) 2SD 205(1)  
2SB 172(1)

Diodes & Rectifiers: OA90(2) FR202(1) SW0501(2)  
1S990(1) KC2DP22/1(2)

Recording System: AC bias 35 kHz

Erasing System: AC erase

Recording Track  
System: 8 track, 2 channel stereo

Tape Speed: 3-3/4 ips

Fast Forward Time: Approx. 300 seconds with cartridge  
tape 57 m

Frequency Response: 50~12,000 Hz

Inputs: 2 "MIC" 5.6 K $\Omega$  -75 dB  
2 "AUX IN" 100 K $\Omega$  -27 dB

Outputs: 2 "LINE OUT" 330 $\Omega$  -6 dB  
1 "HEADPHONE" 8 $\Omega$  45 mV

DIN Socket: Record/playback connector

Dimensions: 16-5/8"(W)  $\times$  4-1/2"(H)  $\times$  9-1/4"(D)

Weight: 12-1/8 lbs

<EXPORT DIVISION>  
**MATSUSHITA ELECTRIC TRADING CO., LTD.**  
P.O. Box 288 Central, Osaka, Japan

**MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.**  
**AUDIO TAPE RECORDING DEPT.**

# LOCATION OF PARTS

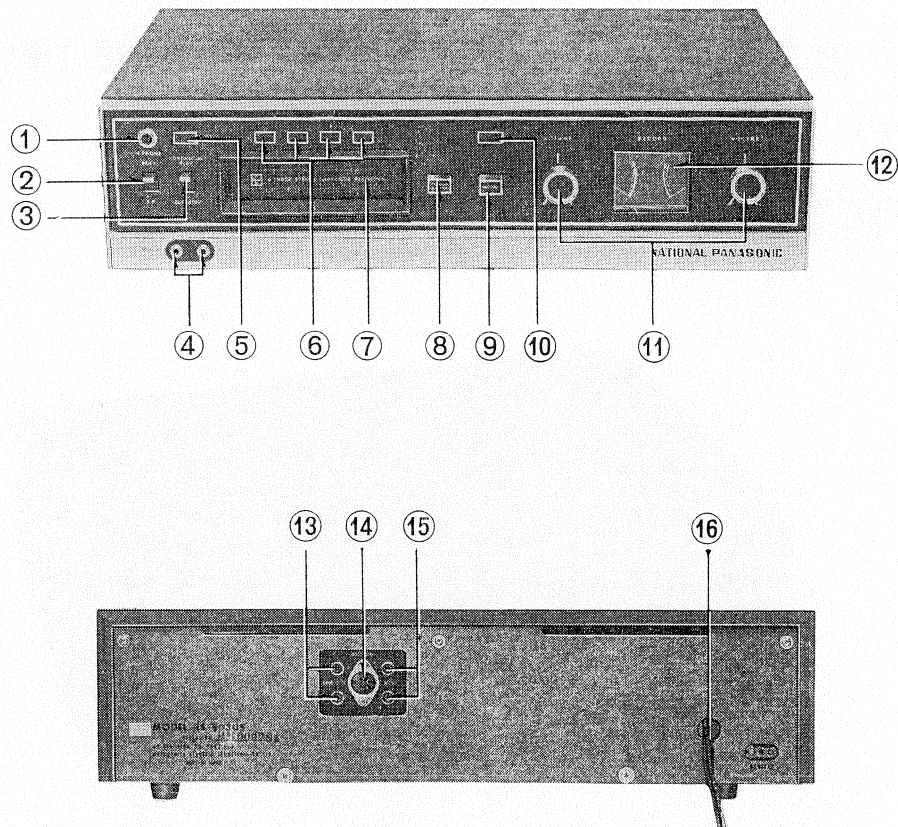
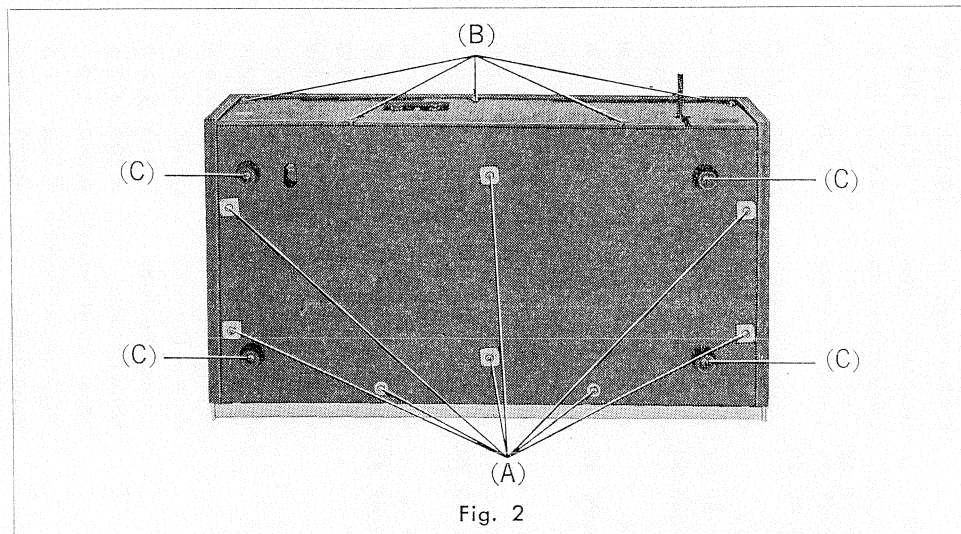


Fig. 1

- |                           |                                    |
|---------------------------|------------------------------------|
| ① Headphone Jack          | ⑨ Record Button                    |
| ② Fast Forward Control    | ⑩ Recording Indicator              |
| ③ Automatic Stop Switch   | ⑪ Recording Level Adjustment Knobs |
| ④ Microphone Jacks        | ⑫ VU Meter                         |
| ⑤ Auto-stop Indicator     | ⑬ Line Output Jacks                |
| ⑥ Program Indicator       | ⑭ DIN Socket                       |
| ⑦ Tape Slot               | ⑮ Auxiliary Input Jacks            |
| ⑧ Program Selector Button | ⑯ Power Cord                       |

# DISASSEMBLY INSTRUCTIONS

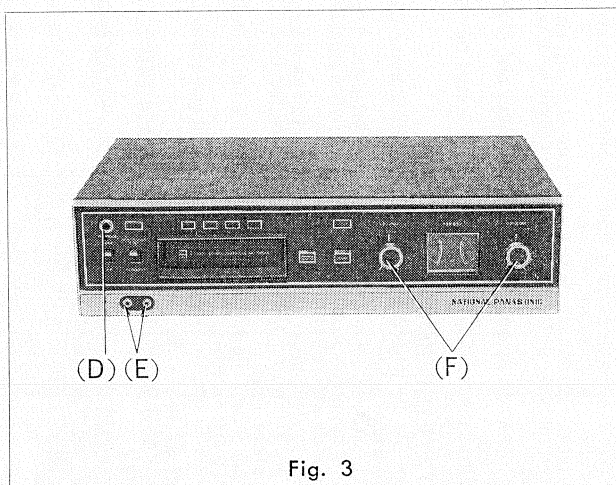
## HOW TO REMOVE BACK BOARD & BOTTOM BOARD



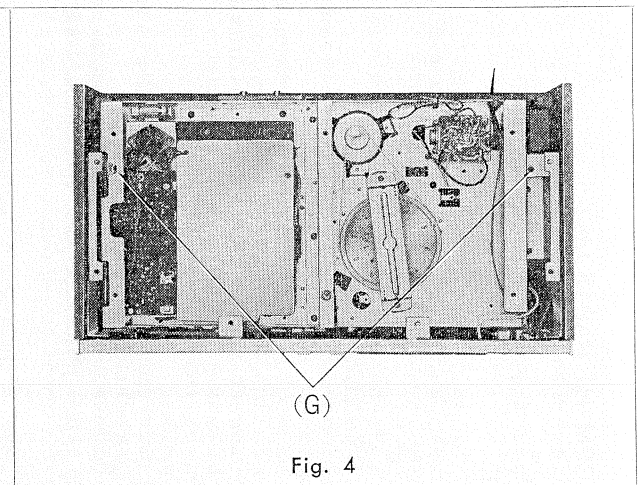
1. Remove 5 Back Board Holding Screws (A) and remove Back Board.

2. Remove 8 Bottom Board Holding Screws (B) and 4 Rubber Foot Holding Screws (C). Remove Bottom Board.

## HOW TO REMOVE CHASSIS



1. Remove Headphone Jack Holding Nut (D), 2 MIC Jack Holding Nuts (E) and 2 Volume Control Knobs (F).



2. Remove 2 Chassis Holding Screws (G), pull out Chassis onto the back board side and remove it.

# REPLACEMENT PARTS LIST

Before you give us an order for parts, please read the following instructions without fail.

1. Parts written in gothic in this Replacement Parts List are always kept in stock in our department, and can therefore be shipped earlier than other parts.
2. Parts written in slender letters are not kept in stock, and will therefore be shipped later. So place an order for them separately.
3. Disassembled parts of Sub Assembly are respectively given a suffix to the Ref. No.
4. Parts other than the above are not available from us.

## LISTA DE PIEZAS DE RBPUESTO

Antes de hacernos un pedido de piezas, dígnese leer sin falta las instrucciones siguientes:

1. De las piezas cuyos nombres aparecen escritos con letras góticas en esta Lista de Piezas de Repuesto, tenemos surtido en nuestro departamento, y por lo tanto, podemos enviárselas antes que otras.
2. De las escritas con letras más finas, no tenemos surtido, por lo que su envío se retardará. Por eso, haga el favor de hacer por separado los pedidos.
3. Las piezas desmontadas del Sub Assembly llevan respectivamente un sufijo a la Referencia No.
4. No podemos proveer de piezas no mencionadas arriba.

## LISTE DES PIECES DE RECHANGE

Avant de nous commander des pièces, veuillez lire sans faute les instructions suivantes:

1. Les pièces écrites en grosses lettres dans cette Liste de rechange sont toujours en magasin dans notre section, et pourront donc s'expédier plus vite que les autres pièces.
2. Les pièces écrites en minces lettres ne sont pas en magasin, et s'expédieront plus tard. Passez-nous donc séparément votre commande pour elles.
3. Les pièces désassemblées du Sub Assembly ont chacune un suffixe au Ref. No.
4. D'autres pièces que celles montrées ci-dessus ne sont pas disponibles chez nous.

## ERSATZTEILELISTE

Bitte lesen Sie die folgende Anweisung sorgfältig, bevor Sie die Bestellung auf unsere Ersatzteile geben.

1. Die Ersatzteile, die in dieser Liste mit der fetten Schrift geschrieben sind, sind immer in unserer Abteilung als Vorrat befindlich, und sind daher schneller zu liefern als andere Teile.
2. Die Ersatzteile in der dünnen Schrift sind nicht vorrätig und brauchen deshalb einiger Zeit bis zur Lieferung. Bitte geben Sie daher die Bestellung separat für solche Teile.
3. Demontierte Teile der Uterbaugruppe sind je mit Nachsilbe nach dem Referenznummer versehen.
4. Andere Ersatzteile als die obigen sind nicht von uns zu liefern.

## 更換用零件一覽

特此說明有關更換用零件如下，以供參考。敬請在訂購之前惠豫一讀，以免發生差錯為荷。

1. 凡是在更換用零件一覽中用粗字體所示者，均常備有現貨在本事業部，故此均得以較之其他零件提早裝船供應之。
2. 用細字體記明者則不然，因為沒有現貨，自然不得及時供應。訂購時，請將上述兩者分開行之為宜。
3. 凡是局部裝備組件所拆散的零件，各附有接尾數目字在該組件查詢號碼之後頭。
4. 凡是上述以外的零件，一概無從供應之。

# RESISTORS

Ref. No.	Description		Part No.
R1, 2 ...	Carbon Resistor	390Ω	ERD14TJ391
R3, 4 ...	Carbon Resistor	100 KΩ	ERD14VJ104
R5, 6, 69 ...	Carbon Resistor	100Ω	ERD14TJ101
R7, 8, 9, 10 ...	Carbon Resistor	5.6 KΩ	ERD14VJ562
R11, 12, 21, 22, 25, 26, 33, 34	Carbon Resistor	10 KΩ	ERD14VJ103
R13, 14, 49, 50, 70, 73 ...	Carbon Resistor	2.2 KΩ	ERD14VJ222
R15, 16 ...	Carbon Resistor	100Ω	ERD14VJ101
R17, 18, 61, 62	Carbon Resistor	1.8 KΩ	ERD14VJ182
R19, 20, 35, 36, 65, 66 ...	Carbon Resistor	33 KΩ	ERD14VJ333
R23, 24 ...	Carbon Resistor	39 KΩ	ERD14VJ393
R27, 28, 29, 30	Carbon Resistor	1.2 KΩ	ERD14VJ122
R31, 32 ...	Carbon Resistor	3.3 KΩ	ERD14VJ332
R37, 38 ...	Carbon Resistor	2.7 KΩ	ERD14VJ272
R39, 40 ...	Carbon Resistor	56Ω	ERD14VJ560
R41, 42, 68, 79, 80 ...	Carbon Resistor	470Ω	ERD14VJ471
R43, 44 ...	Carbon Resistor	4.7 KΩ	ERD14VJ472
R45, 46, 47, 48	Carbon Resistor	3.9 KΩ	ERD14VJ392
R51, 52 ...	Carbon Resistor	120Ω	ERD14VJ121
R55, 56 ...	Carbon Resistor	330Ω	ERD14VJ331
R57, 58 ...	Carbon Resistor	18Ω	ERD14VJ180
R59, 60 ...	Carbon Resistor	8.2Ω	ERD14TJ8R2
R63, 64 ...	Carbon Resistor	330 KΩ	ERD14VJ334
R67 ...	Carbon Resistor	1.5 KΩ	ERD14VJ152
R71 ...	Carbon Resistor	1 KΩ	ERD14VJ102
R74 ...	Solid Resistor	470Ω	ERC12GM471
R75 ...	Wire-wound Resistor	0.75Ω	ERM12PJR75
R76 ...	Wire-wound Resistor	220Ω	ERM2P221
R77 ...	Solid Resistor	100Ω	ERC12GM101
R78 ...	Solid Resistor	15Ω	ERC12GM150
R81, 82 ...	Carbon Resistor	270Ω	ERD14VJ271
R83, 84 ...	Carbon Resistor	15 KΩ	ERD14VJ153
R99 ...	Carbon Resistor	33Ω	ERD14VJ330
R100 ...	Carbon Resistor	150 KΩ	ERD14VJ154
R101, 102 ...	Carbon Resistor	1 KΩ	ERD14VJ102



## VARIABLE RESISTORS

Ref. No.	Description	Part No.
VR1, 2	Semi-fixed Variable Resistor 10 K $\Omega$ (B)	EVLTOAA00B14
VR3, 4	Variable Resistor 5 K $\Omega$ (A)	EVCB0AL25A53
VR5, 6	Semi-fixed Variable Resistor 1 K $\Omega$ (B)	EVLTOAA00B13
VR7	Semi-fixed Variable Resistor 20 K $\Omega$ (B)	QVLT0NA00B24

## CAPACITORS

C1, 2, 5, 6, 23, 24	Electrolytic Capacitor 3.3 $\mu$ F	ECEA25V3R3N
C3, 4, 17, 18, 21, 22, 27, 28, 29, 30	Electrolytic Capacitor 10 $\mu$ F	ECEA10V10N
C7, 8	Electrolytic Capacitor 47 $\mu$ F	ECEA6V47N
C9, 10	Mylar Capacitor 0.015 $\mu$ F	ECQM05153MZ
C11, 12, 56	Mylar Capacitor 0.056 $\mu$ F	ECQM051563MZ
C13, 14	Styrol Capacitor 470 pF	ECQS1471JZ
C15, 16	Aluminum Capacitor 0.22 $\mu$ F	ECAG25ER22
C25, 26, 31, 32	Electrolytic Capacitor 220 $\mu$ F	ECEA6V220N
C33, 34, 39, 40, 51, 52, 55	Mylar Capacitor 0.1 $\mu$ F	ECQM05104MZ
C35, 36	Mylar Capacitor 0.039 $\mu$ F	ECQM05393MZ
C37, 38	Mylar Capacitor 0.0015 $\mu$ F	ECQM05152MZ
C41, 42	Electrolytic Capacitor 33 $\mu$ F	ECEA16V33N
C43, 44	Mylar Capacitor 0.0022 $\mu$ F	ECQM052222MZ
C46	Electrolytic Capacitor 1000 $\mu$ F	ECEA16V1000N
C47	Electrolytic Capacitor 4.7 $\mu$ F	ECEA25V4R7N
C48, 66	Electrolytic Capacitor 220 $\mu$ F	ECEA16V220N
C49	Electrolytic Capacitor 2200 $\mu$ F	ECEA16V2200N
C53	Styrol Capacitor 2200 pF	ECQS1222JZ
C54	Aluminum Capacitor 4.7 $\mu$ F	ECSY16EF4R7
C57	Styrol Capacitor 820 pF	ECQS5821J
C58, 63	Electrolytic Capacitor 470 $\mu$ F	ECEA16V470N
C59, 60	Mylar Capacitor 0.022 $\mu$ F	ECQM05223MZ
C61, 62	Styrol Capacitor 270pF	ECQS1271JZ
C67	Electrolytic Capacitor 47 $\mu$ F	ECEA10V47N

## TRANSISTORS

Ref. No.	Description	Part No.
Tr1, 2	Transistor	2SB348
Tr3, 4, 7, 8	Transistor	2SB346
Tr5, 6	Transistor	2SB101C <sup>①</sup>
Tr9	Transistor	2SB324 (D,E,F)
Tr10	Transistor	2SB175 <sup>②</sup>
Tr11	Transistor	2SD205 (M)
Tr12	Transistor	2SB172A

## DIODES & RECTIFIERS

D1, 2	Diode	OA90
D3	Diode	FR202
D4, 5	Diode	SW0501
D6	Diode	1S990
D9, 10	Selenium Rectifier	KC2DP22/1

## COILS

L1, 2	Peaking Coil	QLH2007
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## TRANSFORMERS

T1, 2	Output Transformer	QLA0359
T3	Power Transformer	QLP0524
T4	Oscillator Coil	QLB0141
T5	Oscillator Output Transformer	QLB0138

## SWITCHES

S1	Power Switch	QSM0041
S2	Program Indication Selector Switch	ESE126A
S4	Relay Switch	QSK0216

Ref. No.	Description	Part No.
S5	Auto Stop Switch	QST0007
S6	Record/Playback Selector Switch	QSS1091
S7	Program Selector Switch	QSB0169A
S8	FF Switch	QST0013
S9	Playback Switch	QSS1108
S10	Power Voltage Selector Switch	QSR0004
S11	Stop Switch	QSB0101
ELECTRICAL PARTS		
E1	Record/Playback Erase Head	WY802H
E2	VU Meter	QSLT0002
E3	Circuit Board Assembly	QEM132S
E4	Headphone Jack	QJA0218
E5	M3 Jack	QJA0115
E6	Pin Jack Assembly	QJA0907
E7	Cord Bushing	QTD1126A
E8	Cord Clamp	QTD1002
E9	Pilot Lamp	RVL111
E10	Pilot Lamp	XAM30T
E11	Pilot Lamp Cover	QTV1018
E12	Pilot Lamp	XAM37T450
E13	Pilot Lamp Socket	QJS0101
E14	Pilot Lamp Cover	QTV1030
E15	AC Power Cord	QFC1021
E16	Heat Sink	QTH1062S
E17	Record Switch Rewind Spring	QBT1432
E18	Jack Plate	QGJ1149
E19	Jack Indicated Plate	QCS2204
E20	Switch Angle	QMA1944
E21	Shiled Plate	QTS1163
E22	Fiber Washer	QBK7026
E23	Fuse	XBA1E05NR1
E24	Fuse Holder	QTF1021
E25	5P DIN Socket	QJS0723

MECHANICAL PARTS

Ref. No.	Description	Part No.
M1	Motor	QDM1333
M2	Motor Holding Screw $\oplus 3 \times 8$	XTN3+8B
M3	Motor pulley	QDP1310
M4	Motor Pulley Screw	XXA26D6
M5	Screw $\oplus 3 \times 8$	XTN3+8B
M6	Switch Holding Plate	QMA1943
M7	Change Lever-C	QML1861
M8	Return Spring	QBT1216M
M9	Screw $\oplus 2.6 \times 6$	XSN26+6
M10	Head Adjusting Screw	QHQ1088
M11	Washer W2	XWG2
M12	Screw Adjusting Spring	QBC1156
M13	Vertical Table	QMF1413
M14	Head Spacer	QMQ1125
M15	Head Pressure Spring	QBT1470
M16	Head Holding Plate	QMF1412
M17	Head Holding Plate Nut	XNG26E
M18	Head Holding Plate Washer	XWG26
M19	Head Holding Plate Screw	XSN26+5
M20	Screw $\oplus 3 \times 8$	XTN3+8B
M21	Plunger	QME0125
M22	Guide Shaft	QMS1800
M23	Power Source Selector Spring Assembly	QXJ0053
M24	Pilot Angle	QMA1296
M25	Screw $\oplus 3 \times 5$	XSN3+5S
M26	Spring Washer SW3	XWA3B
M27	Safty Lever Assembly	QXL0371
M28	Stop Ring E3	XUC3FK
M29	Recording Lever Assembly	QXL0399
M29-1	Recod Safty Angle	QML1884
M29-2	Stop Ring E3	XUC3FK
M29-3	Fiber Washer	QBK7005
M30	Cartridge Guide	QMH1139
M31	Cartridge Lid	QMF1415

## CABINET PARTS

Ref. No.	Description	Part No.
G1	Body Case Assembly	QYJ1223S
G2	Back Board	QKU1100
G3	Panel Assembly	QYP0245
G4	Record Button-A Assembly	QXB0082
G5	Record Button-B Assembly	QXB0083
G6	Volume Knob Assembly	QYT0161
G7	Bottom Board	QKU1083
G8	Rubber Foot Assembly	QYQ1031S
G9	Wooden Screw $\oplus 3.1 \times 8$	XTN3+10A
G10	Screw $\oplus 3 \times 6$	XSN3+6RS
G11	Screw $\oplus 3 \times 8$	XSN3+8
G12	Screw $\oplus 4 \times 16$	XSN4+16RS
G13	Wooden Screw $\oplus 3.1 \times 8$	XMM31+8
G14	Wooden Screw	QHQ1094
G15	Washer	QWQ1083
G16	Headphone Jack Nut	QNQ1033
G17	Microphone Jack Nut	QNQ1027

## ACCESSORIES

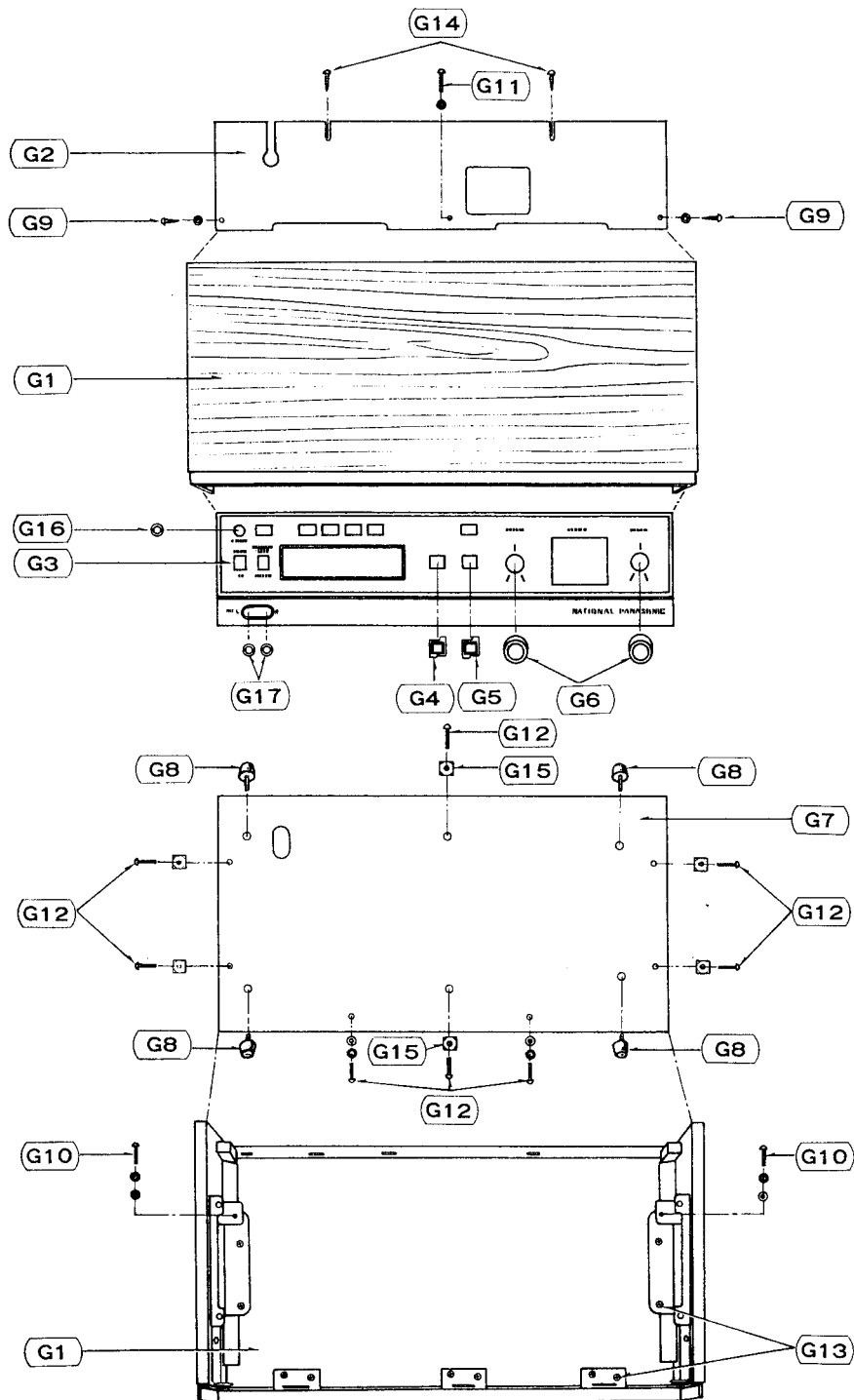
A1	Connection Cord-C	QEB14P
A2	Head Cleaning Bar	QFQ1025
A3	AC Plug Adaptor	QJP0603S
A4	Cartridge Tape	QFT80GNRX
A5	Instruction Book	QQT1386

## PACKINGS

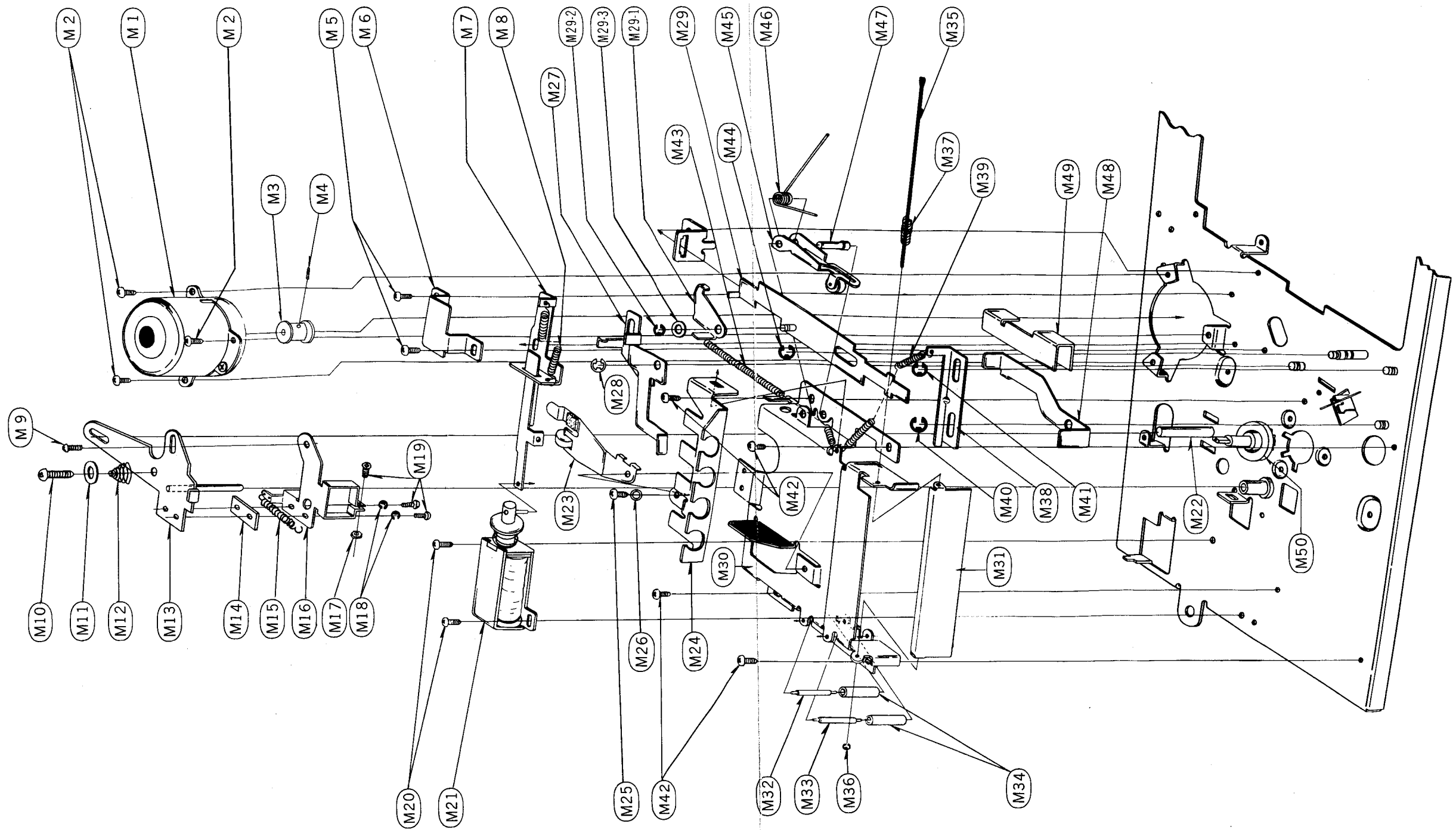
P1	Inner Packing	QPN2256
P2	Inner Cushion	QPN2129
P3	Dust Cover	QFD0121
P4	Accessory Bag	QFV0047
P5	Cord Pad	QFQ1052

Ref. No.	Description	Part No.
M32	Guide Roller Shaft-A	QMS1263
M33	Guide Roller Shaft-B	QMS1326
M34	Guide Roller	QBJ1189
M35	Cartridge Rod	QMR1075
M36	Stop Ring E1.5	XUC15FK
M37	Cartridge Lid Spring	QBC1090
M38	Record Lock Arm	QML1857
M39	Return Spring	QBT1216M
M40	Stop Ring E4	XUC4FK
M41	Stop Ring E3	XUC3FK
M42	Tapping Screw $\oplus 3 \times 8$	XTN3+8B
M43	Return Spring	QBT1216M
M44	Stop Ring E4	XUC4FK
M45	Lock Lever Assembly	QXL0136
M46	Lock Spring	QBN1037
M47	Lock Lever Shaft	QMS1325
M48	Changer Lever	QML1887
M49	Record Lever-2 Assembly	QXL0372
M50	Cam	QMQ1124
M51	Flywheel Belt	QDB0135
M54	Tapping Screw $\oplus 3 \times 8$	XTN3+8
M55	Screw $\oplus 3 \times 6$	XSN3+6S
M56	Spring Washer $3\phi$	XWA3B
M57	Flywheel Retainer	QXH0064
M58	Flywheel	QXF0031
M59	Capstan Metal Boss Assembly	QYQ0066
M60	Screw $\oplus 3 \times 6$	XSN3+6S
M61	Capstan Felt	QBF1109
M62	Capstan Oil Cap	QBJ1191
M63	Tapping Screw $\oplus 3 \times 8$	XTN3+8
M64	Reinforce Angle	QMA1947S

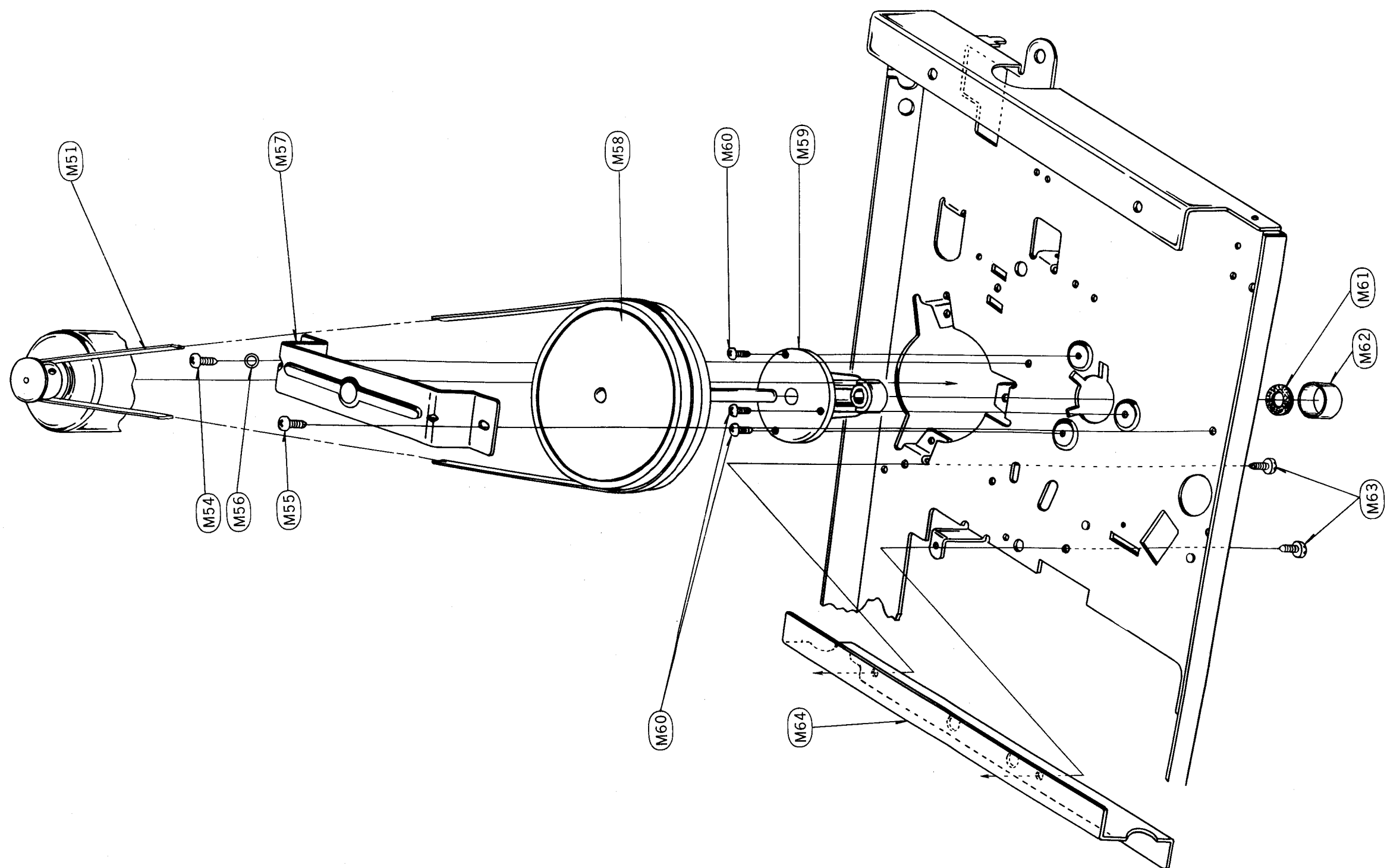
# CABINET PARTS



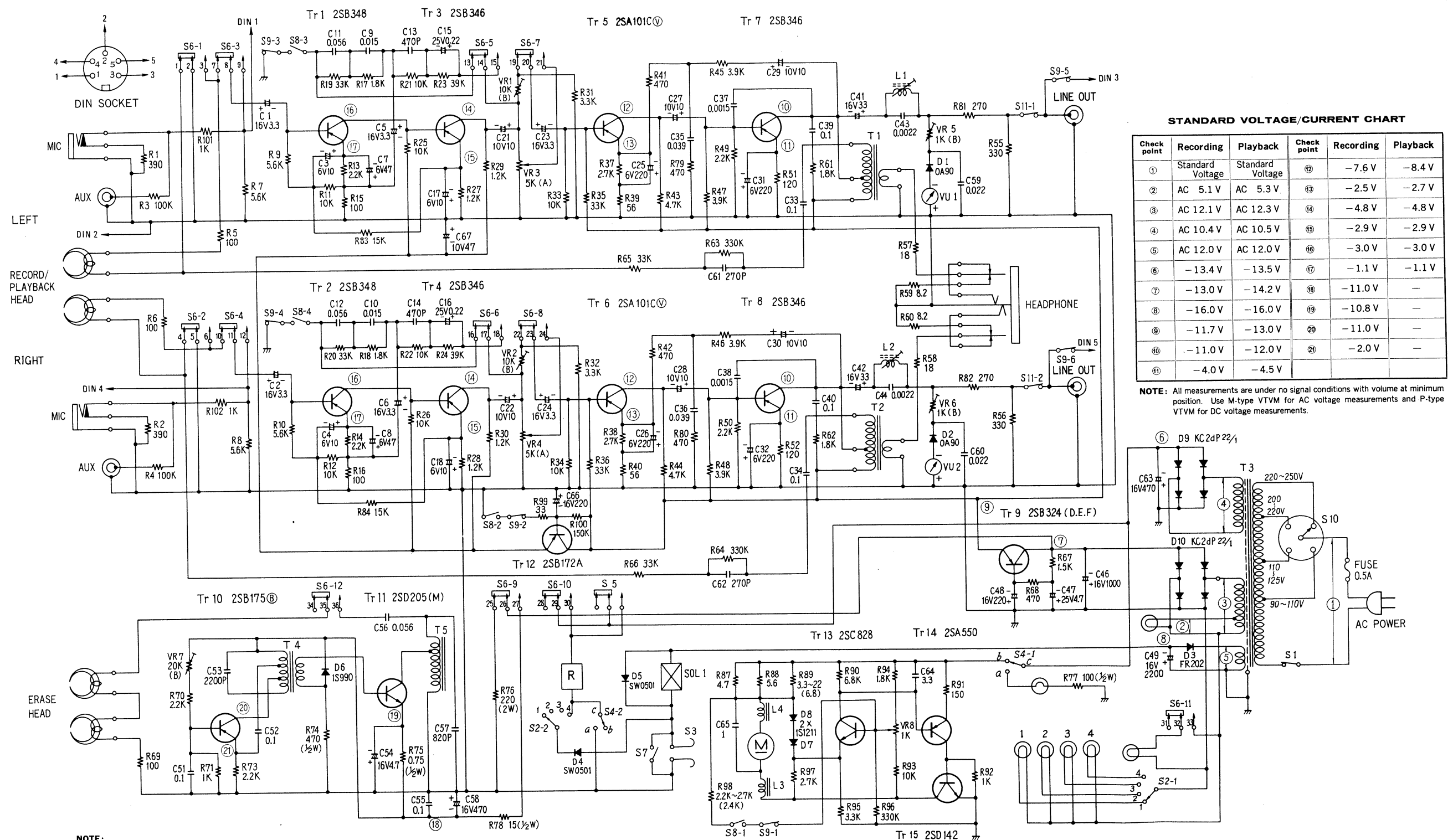
# EXPLODED VIEWS







# SCHEMATIC DIAGRAM MODEL RS-803US



STANDARD VOLTAGE/CURRENT CHART

Check point	Recording	Playback	Check point	Recording	Playback
①	Standard Voltage	Standard Voltage	⑫	-7.6 V	-8.4 V
②	AC 5.1 V	AC 5.3 V	⑬	-2.5 V	-2.7 V
③	AC 12.1 V	AC 12.3 V	⑭	-4.8 V	-4.8 V
④	AC 10.4 V	AC 10.5 V	⑮	-2.9 V	-2.9 V
⑤	AC 12.0 V	AC 12.0 V	⑯	-3.0 V	-3.0 V
⑥	-13.4 V	-13.5 V	⑰	-1.1 V	-1.1 V
⑦	-13.0 V	-14.2 V	⑱	-11.0 V	-
⑧	-16.0 V	-16.0 V	⑲	-10.8 V	-
⑨	-11.7 V	-13.0 V	⑳	-11.0 V	-
⑩	-11.0 V	-12.0 V	㉑	-2.0 V	-
⑪	-4.0 V	-4.5 V			

NOTE: All measurements are under no signal conditions with volume at minimum position. Use M-type VTVM for AC voltage measurements and P-type VTVM for DC voltage measurements.

NOTE:

- S1 ..... Power Switch (ON when REC button is operated or when cartridge is inserted in).
- S2 ..... Program Indication Selector Switch.
- S3 ..... Sensing Switch.
- S4 ..... Relay Switch (b → a when tape stops automatically).
- S5 ..... Auto Stop Switch.
- S6 ..... Record/playback Selector Switch (shown in playback).
- S7 ..... Program Selector Switch.
- S8 ..... FF Switch (ON in FF).
- S9 ..... Playback Switch (ON in playback, OFF in REC).
- S10 ..... Power Voltage Selector Switch.
- S11 ..... Stop Switch (ON when cartridge is inserted in).
- Resistors are 1/4 watt unless specified otherwise.  
K=1,000Ω, M=1,000,000Ω
- Capacitors are microfarad (μF) unless specified otherwise.  
P=Micro-microfarads.
- Encircled numbers (○) show the checkpoints for voltage and current. The values are marked in the standard voltage/current chart.